REMARKS

Applicants would like to thank the Examiner for his careful review of the claims documented by the claim objections. All of the suggestions of the Examiner have been implemented in the claims and all issues raised by the objections have been addressed.

Claims 1-3, 7, 8, 10-14, 17, 18, and 20 were rejected under 35 U.S.C. §102(b) as being anticipated by US Pat. 5,700,281 (Brewer et al.) This ground of rejection is respectfully traversed, as Brewer et al. does not utilize the apparatus of the claimed invention or monitor or identify handling of electrodes or removal from a compartment as recited in the claims..

Amended Claim 1 describes a defibrillator apparatus comprising an electrode with attached lead wire; an electrode compartment with an attached conductor; a source of alternating current; and an electrode deployment detector configured for monitoring a magnitude of an electrical characteristic measured from an electrical circuit having from the source an alternating electric current path that includes the electrode with attached lead wire, the conductor, and a space or other electrical insulator intervening between the conductor and the electrode with attached lead wire, the conductor being disposed in the compartment in proximity of the electrode with attached lead wire to create capacitance in the electrical circuit; and identifying, based on a change of the magnitude, an occurrence of at least one of handling of the electrode with attached lead wire and removing of the electrode with attached lead wire from the compartment. A defibrillator of the claimed invention can detect when a stored electrode is being handled or removed from a storage compartment, as the handling or removal changes the capacitance set up between the electrode and the conductor attached to the compartment. Sensing this action by a rescuer can alert the AED that the electrode is being handled and an appropriate electrode prompt should be issued.

Brewer et al. do two kinds of sensing activities with their electrode. One involves a conductive connector 64, shown in Fig. 2, which electrically connects the two electrodes. This connector completes a continuous DC electrical path from one electrode pin of the defibrillator, through a lead wire 56, over to the other electrode via the connector 64, and back through the other lead wire 56 to the other electrode pin of the defibrillator. Brewer et al. have positioned the connector 64 in line with the tear line 69 of the electrode package so that, when the package is torn open, the tearing will tear the connector 64, breaking the continuous DC electrical path. The broken electrical path tells the defibrillator that a used electrode is connected to the defibrillator and an unbroken electrical path tells the

defibrillator that a fresh electrode is connected ready for use. As Brewer et al. say at col. 5, lines 14-18, " As a result of this construction, the presence of an unbroken conductive connector 64 and the subsequent breaking thereof during usage of electrodes 50 can be automatically detected for determining the presence of fresh electrodes 50." The conductive connector 64 is not capacitive, it is a part of a DC path. It also does not tell if the electrode is being handled or has been removed from the electrode compartment of the defibrillator. The use could remove the electrode package from the compartment and handle it extensively without tearing the connector, and the defibrillator will have no indication of this activity. Thus, the connector 64 and its use cannot anticipate Claim 1.

The second sensing technique of Brewer et al. is described from col. 7, line 57 to col. 8, line 16. The defibrillator applies a clock signal to the electrodes and an impedance measuring circuit 100 measures the magnitudes of the applied and received clock signal. The response can indicate several things about the electrodes. If the resistance is very low (less than 10 ohms), the defibrillator assumes that the electrode package is still unopened. If the resistance is very high (greater than 250 ohms) the defibrillator assumes that the electrode connector 58 is not properly connected to the defibrillator or the electrodes are not properly positioned on the patient. But the defibrillator does not know which is the case. If the resistance is between 20 and 250 ohms, the defibrillator will assume that the electrodes are properly attached to the patient. This condition could be verified by successful reception of a patient ECG signal from the electrodes. Again it is seen that no capacitive measurement is used which would detect when the electrodes are being handled or removed from the electrode compartment of the defibrillator. There is no conductor attached to an electrode compartment in Brewer et al. which could create a capacitance with an electrode as recited in Claim 1. Accordingly it is respectfully submitted that Brewer et al. cannot anticipate Claim 1 and its dependent Claims 2-10.

Amended Claim 11 describes a method of detecting when a defibrillator electrode has been handled or removed from a storage compartment comprising the steps of monitoring a magnitude of an electrical characteristic measured from an electrical circuit having from an alternating current source an alternating electric current path that includes an electrode with attached lead wire, a conductor attached to the storage compartment, and a space or other electrical insulator intervening between the conductor and the electrode with attached lead wire, the conductor being disposed in proximity of the electrode with attached lead wire when the electrode is stored in the compartment to create capacitance in the electrical circuit; and identifying, based on the magnitude, an occurrence of at least one of

handling of the electrode with attached lead wire and removing the electrode with attached lead wire from the storage compartment. Since there is an insulator between the conductor of the storage compartment and the electrode, a capacitance is developed between the two which can be monitored. When the electrode is handled or removed from the compartment the relative position of the "plates" of the capacitance is changed and this change in capacitance is sensed by the electrical circuit to identify the handling or removal of the electrodes. As described above, Brewer et al. have a connector 64 which completes the DC circuit path between the two electrodes 50. When the circuit path is broken the defibrillator in Brewer et al. knows that the electrode package has been opened or, when the path is intact, the defibrillator knows that fresh electrodes are connected to the defibrillator. Brewer et al. also measure a resistance between the electrodes and use the measured resistance to sense the connection of the electrodes to the defibrillator, improper connection of the electrodes to the defibrillator or patient, or proper positioning on the patient. There is no capacitance which is sensed to inform the defibrillator of handling of the electrodes or removal from a storage compartment as recited in Claim 11. For these reasons it is respectfully submitted that Brewer et al. cannot anticipate Claim 11 and its dependent Claims 12-20.

Claims 4-6, 9, 15, 16 and 19 were rejected under 35 U.S.C. §103(a) as being unpatentable over Brewer et al. in view of various combinations with US Pat. 4,165,749 (Cansell), European patent publication EP 57,561 (Matthews et al.), and US Pat. 6,336,047 (Thu et al.) Cansell was cited for its showing of a rectifier. Cansell is a manual defibrillator with paddle electrodes 1 and 2 with handles that are held against the patient's chest while the defibrillation shock is applied. It does not use adhesively attached electrodes as in the case of the present invention and Brewer et al. Since the defibrillator is entirely manual it does no sensing of any electrode activity. Matthews et al. was cited for its showing of a time division multiplexer and describes a muscle stimulator with electrode pairs W-Z which are attached to a patient to stimulate underlying muscles. Matthews et al. also does not show or suggest the sensing of any electrode activity. Thu et al. was cited for its showing of the use of frequency sum and difference computation to identify electrode position. Thu et al. describes a training manikin which is used to train a potential rescuer in placement of electrodes on a patient. The manikin has several sensors 2 beneath the surface of the manikin's cover which transmit different frequencies which can be received by the training electrode 1 and decoded by band-pass filters 6 and compared in a ratio to provide information concerning electrode placement on the manikin. It is noted that a patient has no sensors under his or her skin to transmit signals to an electrode, and that operational

defibrillators do not have band-pass filters to detect different frequency signals transmitted by a patient. Furthermore, in Thu et al. the different frequency signals are transmitted from the manikin and received by the training electrode. In the present invention a frequency-sensitive circuit is tuned or detuned by a capacitance change when one "plate" of a capacitance (the electrode) moves with respect to the other "plate" (the storage compartment conductor). The frequency shift indicates movement of the electrode. Thu et al. use the training electrode as an antenna to receive r.f. signals radiated from the manikin, a concept not applicable to an actual defibrillator and patient. No "plate" of a capacitance is moved to affect the capacitive reactance of a tuned circuit. Accordingly it is respectfully submitted that the combination of Brewer et al. with Cansell, Matthews et al. and Thu et al. still fail to render Claims 1 and 11 unpatentable. It follows that the various combinations of patents also cannot render their dependent Claims 4-6, 9, 15, 16 and 19 unpatentable.

In view of the foregoing amendments and remarks it is respectfully submitted that the claim informalities have been corrected, that Claims 1-3, 7, 8, 10-14, 17, 18, and 20 are not anticipated by Brewer et al., and that Claims 4-6, 9, 15, 16 and 19 are patentable over any combination of Brewer et al. with Cansell, Matthews et al. and Thu et al. Accordingly it is respectfully requested that the rejection of Claims 1-3, 7, 8, 10-14, 17, 18 under 35 U.S.C. §102(b) and of Claims 4-6, 9, 15, 16 and 19 were rejected under 35 U.S.C. §103(a) be withdrawn.

In light of the foregoing amendment and remarks, it is respectfully submitted that this application is now in condition for allowance. Favorable reconsideration is respectfully requested.

Respectfully submitted,

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December 8, 2008